# 2018B F=ma Exam: Problem 6 

Kevin S. Huang



We are given

$$
x \propto \frac{F}{I} E^{\alpha} L^{\beta}
$$

From dimensional analysis,

$$
\begin{aligned}
{[x] } & =\frac{[F]}{[I]}[E]^{\alpha}[L]^{\beta} \\
L & =\frac{F}{L^{4}} \frac{F^{\alpha}}{L^{2 \alpha}} L^{\beta}
\end{aligned}
$$

We have

$$
\begin{gathered}
0=1+\alpha \\
1=-4-2 \alpha+\beta
\end{gathered}
$$

Hence,

$$
\begin{gathered}
\alpha=-1 \\
\beta=3 \\
x \propto L^{3}
\end{gathered}
$$

so the answer is D .

